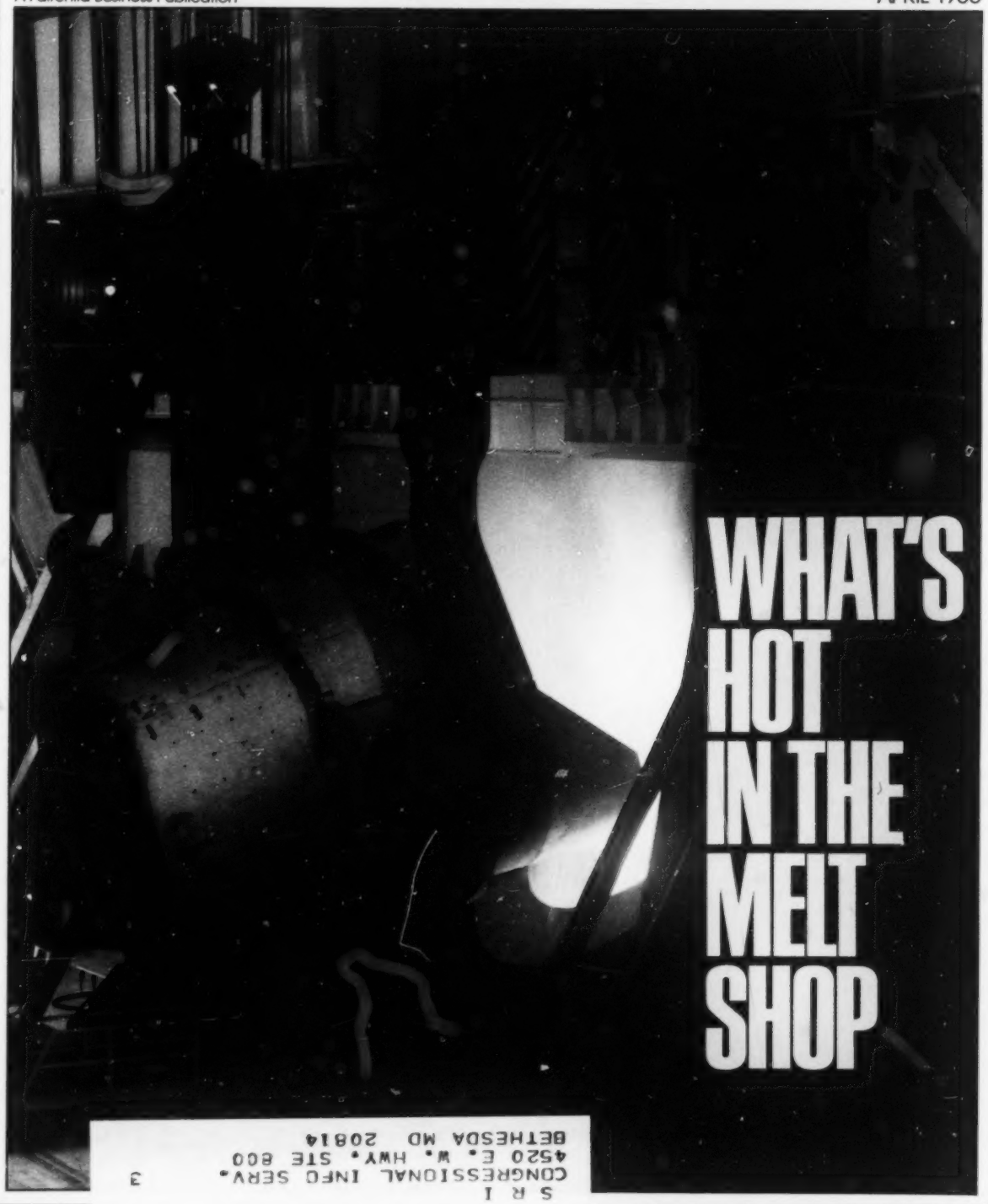
4/13/88 C3400-7

IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

A Fairchild Business Publication

APRIL 1988



WHAT'S HOT IN THE MELT SHOP

S R I
CONGRESSIONAL INFO SERV.
4520 E. W. HWY. STE 800
BETHESDA MD 20814

208 ***********3-DIGIT
849 000250 129 849

CONTENTS

IRON AGE

APRIL 1988

Dofasco, Inc., has converted an oxygen furnace to Klockner's K-OBM process.

What's Hot In The Melt Shop P. 15

Steelmakers are searching for new ways to enhance the technical potential of the basic oxygen furnace.

EDITORIAL

Will We All Fall Down And Go Boom – *P.3*

NEWSWATCH

The VRAs have become a source of friction in the steel industry. – *P.7*

MINI-MILLS

The smaller steelmakers are back on the growth track. – *P.23*

MINI-MILLS

Smaller steelmakers are equipping for the sheet market. – *p. 27*

METALS MINING

Nonferrous producers are taking advantage of new technology. – *P.33*

ANNEALING

A new annealing process uses hydrogen as a protective gas. – *P.35*

MATERIALS REPORT

Steel shipments could reach 78 million tons this year. – *P.41*

STEEL BY GEORGE

The mini-mills are as diverse a group as the maxi-mills. – *P.48*

DEPARTMENTS

P.4 – Staff

P.13 – Industrial Briefs

P.38 – Product Review

P.40 – Free Literature

P.42 – P&P Data

P.43 – Ferrous Scrap

P.45 – Clearing House

P.47 – Ad Index

P.49 – Reader Service Card

VOL. 4 No. 4

Iron Age (ISSN #0897-4365) (USPS #269-780) is published monthly by Fairchild Publications, 7 East 12th St., New York, N.Y. 10003. Fairchild Publications is a division of Capital Cities Media, Inc., New York, N.Y. Second Class Postage Paid at New York, N.Y. and additional mailing offices. Iron Age is a controlled circulation publication sent without charge to qualified individuals in the primary metals industry. The annual subscription charge for others interested in receiving the publication is as follows: U.S.A., $35; Canada/Mexico, $50; all other countries $90. Allow up to 12 weeks from date of your order for delivery to start. Single copies when available - $5 each U.S.A., $12 elsewhere.

POSTMASTER: Send address changes to Iron Age, P.O. Box 3026, Wheaton, IL, 60189.

VALUE ADDED

PROVEN RELIABILITY, SUPERIOR PERFORMANCE AND QUALITY SERVICE IN A FULL LINE OF PRODUCTS THAT WILL IMPROVE YOUR COMPETITIVE EDGE.

BOF Tap Hole Nozzle

•

NKK Rotary Ladle Gate System

•

NKK Tundish Gate System

•

Tundish Level Control

•

Ladle and Tundish Shrouds

•

Tundish Gunning Robot

•

Casting Refractories and Fluxes

•

Chuetsu Continuous Casting Mold Technology

•

Mill Rolls

•

Alumina Fiber Technology

MITSUBISHI INTERNATIONAL CORP.
Rotary Nozzle System Division

Pittsburgh
1801 Parkway View Drive
Pittsburgh, PA 15205

1-800-642-7898 or
412-787-7893
412-787-7197 (FACS)

Chicago
200 East Howard Street
Unit 216
Des Plains, IL 60018

312-298-9322
312-298-0308 (FACS)

ROTARY NOZZLE

CIRCLE READER SERVICE CARD NUMBER 5

IRON AGE

THE MANAGEMENT MAGAZINE FOR METAL PRODUCERS

A Fairchild Business Publication
7 E. 12th St. New York, NY 10003
(212) 741-4000. Telex: FAIRPUB 125308, FAIRPUB 125339
Overseas - FAPB-UR 232366.
FAX: 312-939-0890

Editor: Michael Marley
201 King of Prussia Road, Radnor, PA 19089 (215) 964-4307

Steel Editor: George J. McManus
1520 Park Building, Pittsburgh, PA 15222 (412) 281-1830

Assoc. Editor: Mary B. Dougherty
201 King of Prussia Road, Radnor, PA 19089 (215) 964-4308

Contributing Editors

Materials Editor: Robert R. Irving
Machine Tool Editor: James B. Pond
Systems Editor: R. E. Harvey
Automotive Editor: Bryan H. Berry

Publisher: James M. Lamoree
11 E. Adams St., Chicago, IL 60603
(312) 663-3500

Advertising Sales Director/ Assoc. Publisher: Thomas Fallon
1520 Park Building, Pittsburgh, PA 15222 (412) 281-1830

Marketing Manager: Beth Baltzer
1520 Park Building, Pittsburgh, PA 15222 (412) 281-1830

Associate Publisher/Editorial: Gene Beaudet
201 King of Prussia Road, Radnor, PA 19089 (215) 964-4303

European Sales: V. Stewart
8 Rue Chaveau-Lagarde, Paris, France 75008 (42) 68-19-74

Far East Sales: A. Ohtani
P.O. Box 1941, Central Post Office, Tokyo, Japan (03) 293-9051

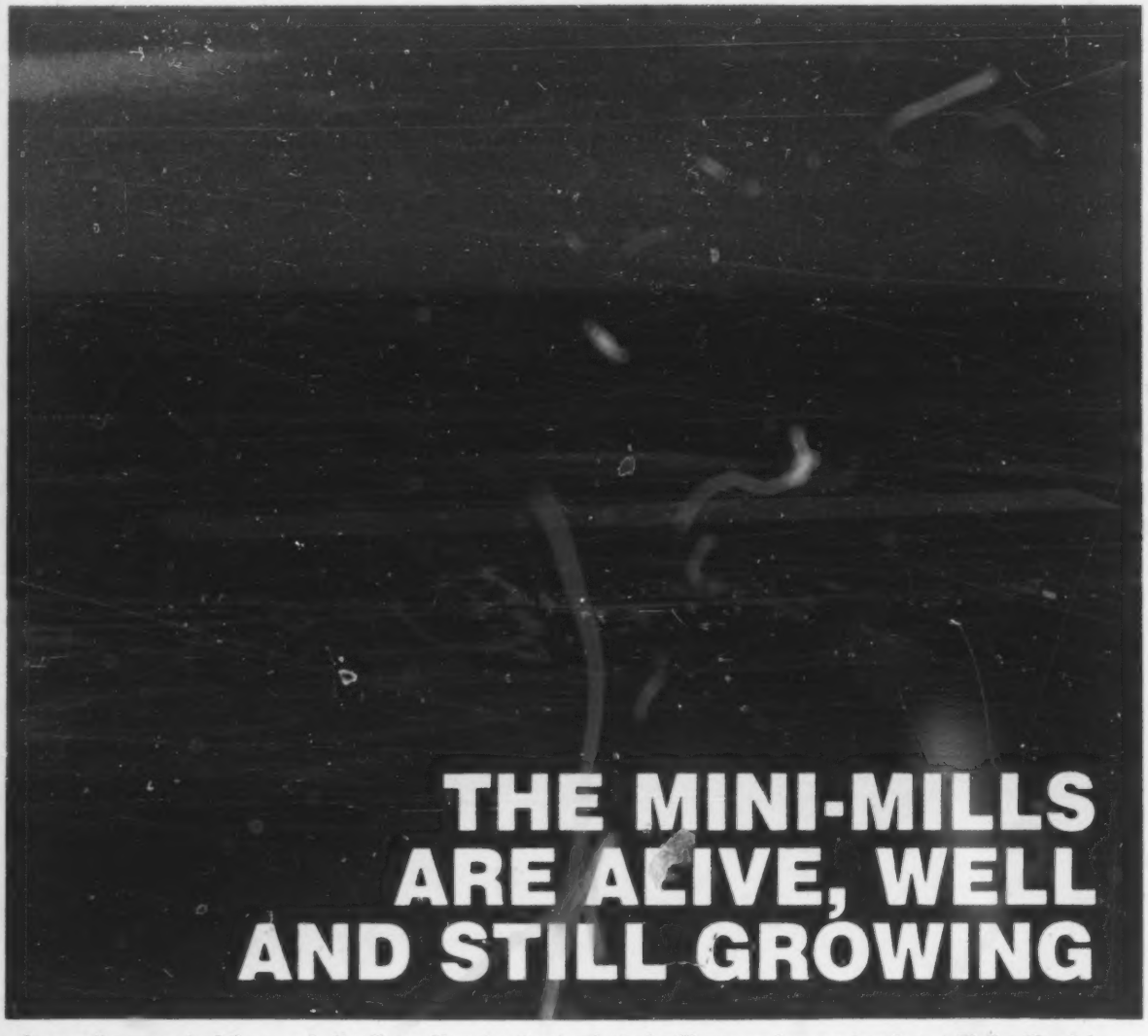
Production Mgr.: Julie Luciano
7 E. 12th Street, New York, N.Y. 10003
(212) 741-4335

Circulation Mgr.: Robert Acquaye
7 E. 12th Street, New York, N.Y. 10003
(212) 741-4470

Fairchild Publications
A Capital Cities/ABC, Inc., company
Chairman of the Board: John B. Fairchild
President: Phillip J. Meek
Executive Vice President: Kenneth Share
Senior Vice President: David Branch
Senior Vice President: Steve Stoneburn
Senior Vice President and Treasurer: Philip L. McGovern
Senior Vice President/Operations: Richard J. Lynch

Copyright © 1988 by Fairchild Publications, a division of Capital Cities Media, Inc.

VBPA



THE MINI-MILLS ARE ALIVE, WELL AND STILL GROWING

Among the newest of the new is the Nucor-Yamata structural steel mill now under construction at Blytheville, Ark.

The mini-mills are alive and well.

After nearly six years of depressed conditions, the smaller steel companies are not only enjoying brisk demand, but are back in the growth mode that best suits the industry's temperament. Rising scrap prices have done nothing to discourage optimistic predictions.

"I would expect electric furnace capacity will certainly approach 40 pct of the steel melt in the United States," said Robert A. Garvey, president, North Star Steel Co.

At the recent meeting of the Steel Bar Mills Association, assembled executives were told the electric furnace share of the steel industry would actually reach more than 50 pct by 1996.

Implications of this were noted by J.W. Brown, director of market development for Union Carbide electrode systems. "For electric furnaces to get to 50 pct," he noted, "they have to include flat products."

That doesn't deter James A. Todd, Jr., president of Birmingham Steel Corp. "We're very bullish on mini-mills in general," said Mr. Todd. "We think Ken Iverson will make thin slab casting work. We think that's going to open up some new oppportunities for mini-mills. We want to be part of that game."

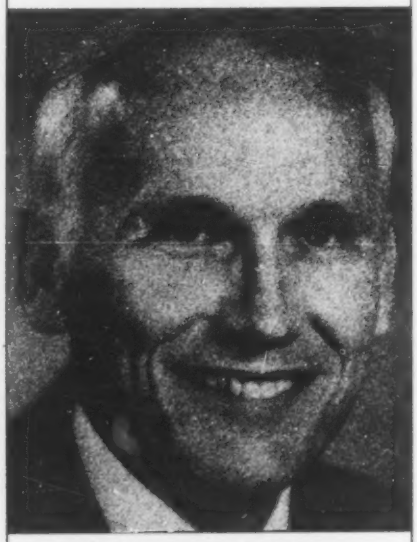
F. Kenneth Iverson, chairman of Nucor Corp., is building one new mini-mill to produce sheet steel and another to make heavy structurals. As to why Nucor is making these bold moves and why Birmingham is itching to follow, the answers probably relate to momentum and dynamic individuals.

"We're very pleased with the way things have gone," said Mr. Todd, "but you can't quit once you start on this route."

Birmingham Steel's route has taken it from a standing start in 1984 to more than 1 million tons of capacity today and sales of more than $162 million in the last six months reported. (Cont. on p. 24)

"If you start with a low enough base, it isn't hard to be the fastest growing steel company in the country," said Mr. Todd.

You can't quit running because the drives that produced past growth for Birmingham Steel and others aren't compatible with standing pat. North Star Steel, which has been acquiring companies regularly, shows no sign of resting on its oars.



'I would expect electric furnace capacity will certainly approach 40 pct of the steel melt in the United States.'

Robert A. Garvey, president, North Star Steel Co.

"As the technology for flat rolled continues to improve, you'll see mini-mills put up regional plants that supply some of the markets now supplied from long distance," said Mr. Garvey. "We continue to monitor all technology available. When it (sheet production) makes economic sense, certainly."

Boom, Boom

The happy mood of the mini-mills is partly due to the general steel revival. "Things are now the best they've been since 1974," said James Mertz, president of Calumet Steel Co. in the Chicago area.

"Things are looking better as far as the reinforcing steel market," said Ralph H. Moore, Jr., president of Owen Electric Steel Co. of South Carolina. "Most of the mini-mills are running flat out. I think the currency change had something to do with it. There's got to be less steel coming in."

There is less foreign steel coming in, and some of the surplus domestic capacity has been eliminated. "Too many people got in the business," said Mr. Mertz.

He noted that overcrowding had been relieved by some dropouts, and he cited the deletion of rebars from the product line of Bethlehem Steel. "Look at the profitable rebar business in the Northeast," he said.

Mini-mills have taken the rise in scrap prices in stride. "I see prices coming down in the next three months," said Robert M. Wilthew, president of Northwestern Steel & Wire Co. "I don't believe they're going to come down to where they were at mid-1987."

Similar comments came from Mr. Garvey of North Star Steel. "It may not go down to the distressed levels of two years ago," he said, "but I don't feel there's a problem with scrap availability. The pricing levels are such that scrap is being brought into the yards."

So far, the long-standing relationship between scrap prices and steel prices seems to be holding up. "Historically, when scrap prices are high, steel prices are high and the markets are good," said Ralph R. Boswell, vice president, steel mills, Florida Steel Corp.

"As long as we can get that increase from the buyer, we can live with it," said Mr. Wilthew of the scrap impact. "The question is how long can the steel consumer live with it before he might be in danger of greater import penetration."

In some cases, mini-mills are the consumers as well as the producers. "We're also in the fabricating business," said Mr. Moore of Owen Electric. "Those people who are locked in on fabricating contracts for a long period are being hurt."

Florida Steel fabricates rebars and is aware of the downstream squeeze, but Mr. Boswell doubts that this will open the door for foreign steel. "Foreigners are having to pay the same prices for scrap," he said. "A lot of them get it in the U.S."

In short, the mini-mills aren't inclined to panic over scrap. "If you come to the table every month to buy your requirement, eventually you're going to get your arms cut off," said Mr. Mertz. "That's not a negative thing. It's the free market."

Looking Back

This philosophical attitude possibly stems from the knowledge that the mini-mill movement has survived the ups and downs of nearly a century. The modern era began in the 1960s, but the Steel Bar Mills Association goes back 77 years.

'I see (scrap) prices coming down in the next three months, (but) I don't believe they're going down to where they were at mid-1987.'

Robert M. Wilthew, president, Northwestern Steel & Wire Co.

"It started as the rail steel association," said Oliver A. Dulle, Jr., executive vice president of the organization. "It was a handful of people who re-rolled rail."

The name was changed in the 1960s, but the association's roster still includes at least two re-rolling mills: Franklin Steel Co. in Franklin, Pa., and Chicago Heights Steel in Chicago Heights, Ill.

"We were founded in 1893," said Frank L. Corral, president of Chicago Heights Steel and new president of the Steel Bar Mills Assn. "This plant was the founding plant of Inland Steel Co."

The plant remained part of Inland until it was sold in 1969. It is now owned by private investors and is doing well. "Our order book is strong at this point in time," said Mr. Corral.

Capital Spending

While the mini-mills seem poised for fresh growth, most of them never really stopped running. "We have recently expanded our operation to a little in excess of 300,000 tons a year," said William J. Humes, Jr., executive vice president of Auburn Steel Co., Inc., and retiring president of the Steel Bar Mills Assn.

"That's from the beginning in 1976 of about 150,000 tons," said Mr. Humes. The increase came by way of improved labor productivity, plus we put in capital. Last year, we invested $10 million. In 1988, we're going to invest another $10 million.

"Most of the money is going into our rolling mill because the previous year we upgraded our melt shop. We have an excess of melting capacity."

'Historically, when scrap prices are high, steel prices are high and the markets are good.'

Ralph R. Boswell, vice president, steel mills, Florida Steel Corp.

All of Auburn's capital dollars have been generated internally. "We didn't go to the banks or to the owners," said Mr. Humes. The owners of Auburn Steel are Japanese.

Florida Steel is going ahead with a capital program that includes the continuous steelmaking process of John Vallomy. This is due for installation at the company's plant in Charlotte, N.C.

"We should place the order for the arc furnace before the end of this month," said Mr. Boswell. "We should be running in maybe 13 months." Running "quite nicely" now is the direct current furnace at the Tampa plant of Florida Steel.

"We're committed to replacing our stacker in (Jackson) Tennessee," said Mr. Boswell. "We've appropriated $6 million to replace that."

At Seattle Steel, Inc., the past few years have illustrated how resilient and durable a mini-mill can be.

Once part of Bethlehem Steel Corp., Seattle Steel was acquired by C E M Associates, Inc., in 1985. The next year, the company was

Electric Furnace Production Will Rise And So Will Demand For Scrap

Long Term Scrap/DRI Demand Forecast

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Steel Production	88.0	86.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
BOF	52.0	51.5	50.0	49.5	49.5	49.0	47.6	45.0	44.2	42.5
EAF	33.5	33.0	34.0	35.0	35.5	36.0	37.4	39.1	40.8	42.5
OH	2.5	1.5	1.0	0.5	-	-	-	-	-	-
Scrap/DRI Req.	78.6	78.3	76.2	76.8	77.1	77.5	78.5	79.7	81.0	82.2
Home Scrap	24.5	23.8	22.9	22.5	22.1	21.8	21.5	21.2	21.0	21.0
Prompt Scrap	19.6	18.9	19.2	19.6	19.8	20.0	20.3	20.5	20.7	20.9
Obsolete Scrap	34.2	35.6	33.7	34.5	34.9	35.3	36.4	37.7	39.0	40.0
DRI	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

Source: Union Carbide

'There'll Never be Another Marvin Selig'

That line appeared more than 20 years ago in an *Iron Age* story by former Technical Editor Cal Kobrin. The point being made was that no one would be able to duplicate Mr. Selig's feat of starting with nothing and building a productive steel enterprise: Structural Metals, Inc. (SMI Steel in Birmingham, Ala., was acquired later.)

The story was the first to identify mini-mills as such, but we were wrong about Marvin Selig being the last of his line. The same creative qualities have since surfaced in a number of other mini-mill entrepreneurs.

The latest display of the creative process has been at Birmingham Steel. The company was started in 1984 with none of the elements that are supposed to be essential to a succesful mini-mill.

"We did start with nothing," said James A. Todd, Jr., president of the company."We had a nine-ton furnace and a seven-ton furnace at our Birmingham mill. Up in Kankakee, we had an ingot practice shop. And we made money that year."

Birmingham has continued to make money—in growing quantities. Earnings of more than $10 million in the last six months reported were double the rate of the previous fiscal year. The company's capacity has been raised to more than 1 million tons by acquisitions of Mississippi Steel, Intercoastal Steel, Northwestern Steel Rolling Mills, and Judson Steel.

What has been the source of this growth and success? "I guess, really, our formula is people," said Mr. Todd. "Our people play hurt."

The hourly people at Birmingham Steel ignore minor discomforts because about 40 pct of their compensation comes from tonnage incentives. "If you don't work a day, you don't get any incentive pay for the whole week," said Mr. Todd. "The only excuse for not working is a death in the family."

The incentive system, which extends to operating management, makes for employee cooperation in holding down the work force. "They don't want you to add labor," said Mr. Todd.

The managers don't want assistants. Operating all non-union plants, Birmingham Steel has complete scheduling freedom. "Our people work 12-hour shifts," said Mr. Todd. "They work four days one week and three days the next. They work every other weekend but every 30 days, they get seven days off."

Some people like this trade-off, and there is general fondness for the company's level of compensation. "Our people make $35,000, $36,000 take-home pay on a gross basis plus some fringes," said Mr. Todd.

The future for Birmingham Steel is uncertain, but likely to be eventful. "We don't know where we're going tomorrow," said Mr. Todd, "but we're afraid to stop. We look at every deal that comes along.

"I don't think you can stay in commodity grades," he added. The big mini-mills will have to get into sheet, Mr. Todd feels. On the other hand, he said, only North Star and Nucor have the resources to get in the sheet business.

"We are not going to go out and bet our company on a $250 million project," he said. "But if we can find the right partner...."

Meanwhile, Marvin Selig and Structural Metals continue on a roll that should soon boost capacity to more than 1 million tons. "Our mill in Birmingham is going like gangbusters," said Mr. Selig. The mill had been Connors Steel and was scheduled for extinction before it was acquired by Structural Metals.

"Here in the Southwest we have big backlogs, but the outlook isn't that good," said Mr. Selig.

He explained that his company's plant in Seguin, Texas, was more than 650 miles from the more active markets in western Texas and southern California.

zapped by two catastrophes.

"We had a flood in our 12 in. mill due to heavy rains," said J. A. Agnello, vice president, sales and marketing. "That had the mill down for six weeks. We had 77 motors that were shorted out and had to be cleaned."

Even after the cleanup, there were spot failures. "The mill didn't run very well for almost a full quarter," said Mr. Agnello.

"Then in March," he continued, "we had a ladle spill. Here was a brand new caster, and 80 tons of hot metal came down. There was over $1 million damage. We had just changed our insurance to $1 million deductible."

These experiences convinced the company that a strong operating man was needed. In late 1986, J.R. Powers was brought in from Slater Steels. As president, Mr. Powers was able to get the company running smoothly.

"Jim's not a hatchet man," said Mr. Agnello. "He spent a lot of time investigating the situation. Then he made some significant changes throughout the operating side of the business. They were good moves."

Also good is the West Coast market. "We've been running full on rebars," said Mr. Agnello. In addition to producing standard products from continuously cast billets, Seattle Steel has been able to carve out some nice market niches for special shapes made from ingots.

Surprisingly good is demand for steel in the Southwest. Houston and Dallas are still feeling the effects of the oil country lag, but other areas are booming.

"The Southwest is still growing," said Arthur W. Lupia, president, Border Steel Mills, Inc., El Paso, Texas. "We're looking at expanding 50 pct." In addition, Border Steel has acquired a number of rebar fabricating operations.

"We've become the largest mill fabricator in the Southwest," said Mr. Lupia. The amount of attrition in this field has made fabrication attractive again, he indicated.

By George J. McManus

PRICE & PRODUCTION DATA

(Effective March 7, 1988)

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
Northeast Coast	284	285	257	180
Pittsburgh	194	208	202	183
Youngstown	122	125	120	121
Lake Erie	167	165	159	123
Detroit	172	164	159	148
Chicago	518	539	501	410
Midwest	197	195	183	187
Southern	221	223	213	170
Western	97	98	81	48
U.S. Production	1,971	2,002	1,875	1,570

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports unless otherwise stated. Rail transportation, handling and unloading may be charged to buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)..... gross-ton 37.344*
Pellets (per iron unit natural)..... gross-ton 58.0-59.4**
Pellets (per iron unit natural)..... gross-ton 72.45-86.9***
Mesabi, regular-unscreened..... gross-ton 32.53
Mesabi, non-bessemer..... gross-ton 30.03-31.53

*37.344¢—U.S. Steel, 5 20 87, FOB Mount Iron, Minn. **58.0¢—Mineral Services, 8 13 85. **59.4¢—Inland Steel Mining, 1 1 85, Pickands Mather, 8 1 85, delivered hold of vessel, upper Lake ports. ***72.45¢ Cleveland-Cliffs, 12 30 86, Oglebay Norton, 3 1 87, 86.9¢—Hanna Mining, 2 26 82.

STEEL PRODUCTION, COMPOSITE PRICES

(Effective March 7, 1988)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1988	To Date 1987
Net tons, in thousands	1,971	2,002	17,769	12,837
Capability Utilization Rate	91.8	93.1	89.1	64.9

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 1/3/88)	24.223	24.223	24.223	25.236
Pig Iron** (Net ton= 2000 lbs.)	$213.00	$213.00	$213.00	$213.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 111.83	$ 112.17	$ 113.17	$ 74.83
No. 2 bundles	$ 75.50	$ 75.50	$ 73.83	$ 50.50

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 120.50	$ 120.50	$ 123.50	$ 79.50
No. 1 steel, Philadelphia	98.50	98.50	98.50	70.50
No. 1 steel, Chicago	116.50	117.50	117.50	74.50
No. 1 bundles, Detroit	135.50	138.50	138.50	76.50
Low Phos., Youngstown	130.50	130.50	130.50	80.50
No. 1 mach'y cast., Pgh	102.50	102.50	102.50	74.50
No. 1 mach'y cast., Phila	111.50	111.50	111.50	93.50
No. 1 mach'y cast., Chi.	134.50	134.50	120.50	95.50

*Finished Steel Composite. Weighted index of steel bars, structurals, plates, rails, hot rolled and cold rolled sheets.
**Pig Iron Composite. Based on average prices for basic and foundry pig iron at representative producing points within the U.S.
***Steel Scrap Composite. Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

NONFERROUS PRICES

(Effective March 7, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum (LME)	95.45	94.85	3/7/88
Copper (C)	108.00	94.00	3/7/88
Lead	34.00	37.00	2/8/88
Magnesium Ingot	153.00	148.00	12/9/85
Nickel (LME)	474.00	436.00	3/7/88
Zinc	47.00	46.00	2/29/88

ALUMINUM: Avg. for last week & previous week. COPPER (C): cathode. LEAD: common grade. MAGNESIUM: 99.8% pig, delivered. NICKEL: Avg. for last week & previous week. ZINC: high grade.

Antimony, American Laredo, Texas	$2.00
Beryllium-aluminum 5% Be, per lb. contained Be	$248.00
Beryllium-copper, per lb. cont. Be	$152.00
Beryllium 97% powder 200	$196.00
Cadmium, ton lots	$1.50
Calcium, ton lots, crown	$3.92
Chromium, 99.5% electro	$4.62
Cobalt, 99%, cathode	$12.50
Gold, per troy oz.	$435.90
Indium, per troy oz.	$9.95
Iridium, per troy oz.	$335.00
Magnesium sticks, 10,000 lbs.	$2.12
Mercury, per 76-lb., f.o.b. N.Y.	$348.00
Molybdenum, lb. tech. moly oxides, 20 lb. MO can	$3.45
Palladium, per troy oz.	$120.00
Platinum, per troy oz.	$479.00
Rhodium, per troy oz.	$1,245.00
Silver ingots, per troy oz.	$6.39
Titanium sponge, melt grade	$4.00
Tungsten powder, hyd red	$9.53-9.85
Vanadium	$6.00
Zirconium sponge	$11.20-17.00

(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb. EX-SMELTER, based on daily market in Kuala Lumpur in Malaysian dollars per kilo.)

Feb. 29—306.00
Mar. 1—304.00
Mar. 2—306.00
Mar. 3—307.00
Mar. 4—307.00

Scrap Prices
Brass Mill Scrap

(Cents per lb.; over 20,000 lbs. add 1¢ per lb.)

	Solids	Turnings
Copper	78	73
Yellow brass	68½	67½
Red brass	64½	60½
Comm. bronze	65	60
Mang. bronze	48	47
Free cutting rod ends	61½	60½

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	76
No. 2 copper wire	66
Light copper	60

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	67
No. 2 copper wire	58
Light copper	51
No. 1 composition	52
No. 1 comp. turnings	52
Hvy. yellow brass solids	38
Hvy. yellow brass turnings	32
Radiators	35

Aluminum

New mixed clips	60	— 61
Old sheet	50	— 51
Old cast	52	— 53
Clean dry borings	46	— 47

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	54	— 55
Mixed L.C. clips	53	— 54
Old sheets and cast	45	— 46
Borings and turnings	38	— 39
Duraluminum clippings	46	— 47

Copper and Brass

No. 1 copper wire	63	— 65
No. 2 copper wire	53	— 54
Light copper	47	— 48
Radiators	36	— 37
No. 1 composition	52	— 53
No. 1 composition turnings	48	— 49
Cocks and faucets	44	— 45
Clean heavy yellow brass	40	— 41
Brass pipe	46	— 47
New soft brass clippings	58	— 59

Lead

Heavy soft lead	12	— 13
Whole batteries	2	— 3
Type metal	21	— 22
Electrotype	13	— 14

Nickel

Nickel solids	240	—250
Nickel rod ends	233	—243
Nickel sheets, clips	233	—243
Nickel turnings	109	—119

Zinc

New zinc clippings	18	— 19
Old diecast zinc	14	— 15

EFFECTIVE MARCH 7, 1988

(Effective March 7, 1988) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 120.00 to	$ 121.00
No. 2 hvy. melting	110.00 to	111.00
No. 1 dealer bundles	154.00 to	155.00
No. 1 factory bundles (auto)	160.00 to	161.00
No. 2 bundles	74.00 to	75.00
No. 1 busheling	157.00 to	158.00
Machine shop turnings	23.00 to	24.00
Shoveling turnings	69.00 to	70.00
Cast iron borings	68.00 to	69.00
Low phos. punchings plate	162.00 to	163.00
Heavy turnings	110.00 to	111.00
No. 1 RR hvy. melting	137.00 to	138.00
Rails, 2 ft. and under	168.00 to	169.00
Scrap rails, random lgth.	150.00 to	151.00
RR specialties	161.00 to	162.00
No. 1 machinery cast	102.00 to	103.00
Cupola cast	94.00 to	95.00
Heavy breakable cast	40.00 to	41.00
Stainless		
18-8 bundles and solids	940.00 to	950.00
18-8 turnings	840.00 to	850.00

Chicago

No. 1 hvy. melting	$ 116.00 to	$ 117.00
No. 2 hvy. melting	112.00 to	113.00
No. 1 dealer bundles	143.00 to	144.00
No. 1 factory bundles (auto)	148.00 to	149.00
No. 2 dealer bundles	85.00 to	86.00
No. 1 busheling	139.00 to	140.00
Shredder scrap	137.00 to	138.00
Machine shop turnings	55.00 to	56.00
Mixed borings and turnings	47.00 to	48.00
Shoveling turnings	64.00 to	65.00
Cast iron borings	69.00 to	70.00
Low phos. forge crop	164.00 to	165.00
Low phos. punchings plate 1/4 in. and heavier	180.00 to	181.00
Low phos. 2 ft. and under	175.00 to	176.00
No. 1 RR hvy. melting	136.00 to	137.00
Scrap rails random lgth	145.00 to	146.00
Reroller rails	159.00 to	160.00
Rails, 2 ft. and under	173.00 to	174.00
RR couplers and knuckles	139.00 to	140.00
RR car axles	164.00 to	165.00
No. 1 machinery cast	134.00 to	135.00
Cupola cast	114.00 to	115.00
Stove plate	134.00 to	135.00
Steel car wheels	159.00 to	160.00
Stainless		
18-8 bundles and solids	910.00 to	920.00
18-8 turnings	790.00 to	800.00
430 bundles and solids	210.00 to	220.00
430 turnings	125.00 to	135.00

Philadelphia

No. 1 hvy. melting	$ 97.00 to	$ 100.00
No. 2 hvy. melting	87.00 to	90.00
No. 1 dealer bundles	142.00 to	145.00
No. 2 dealer bundles	65.00 to	68.00
No. 1 busheling	130.00 to	133.00
Shredder scrap	125.00 to	128.00
Machine shop turnings	29.00 to	32.00
Mixed borings and turnings	29.00 to	32.00
Shoveling turnings	50.00 to	53.00
Low phos. 5 ft. and under	120.00 to	123.00
Low phos. 2 ft. punchings	145.00 to	148.00
Electric furnace bundles	146.00 to	149.00
RR specialties	124.00 to	127.00
Rails, 2 ft. and under	145.00 to	148.00
Cupola cast	102.00 to	105.00
Heavy breakable cast	52.00 to	55.00
No. 1 machinery cast	110.00 to	113.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 84.00 to	$ 85.00
No. 2 hvy. melting	82.00 to	83.00
No. 1 dealer bundles	135.00 to	136.00
No. 2 bundles	59.00 to	60.00
No. 1 busheling	133.00 to	134.00
Drop forge flashings	83.00 to	84.00
Machine shop turnings	53.00 to	54.00
Mixed borings and turnings	25.00 to	26.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	59.00 to	60.00
Heavy breakable cast	45.00 to	46.00
Mixed cupola cast	62.00 to	63.00
Automobile cast	84.00 to	85.00
Stainless		
18-8 bundles and solids	920.00 to	930.00
18-8 turnings	665.00 to	675.00
430 bundles and solids	215.00 to	225.00

Youngstown

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 105.00 to	$ 106.00
No. 2 hvy. melting	94.00 to	95.00
No. 1 dealer bundles	138.00 to	139.00
No. 2 dealer bundles	62.00 to	63.00
Machine shop turnings	45.00 to	46.00
Shoveling turnings	45.00 to	46.00
Low phos. plate	130.00 to	131.00
Electric furnace bundles	134.00 to	135.00
Galvanized bundles	132.00 to	133.00

Cleveland

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 100.00 to	$ 101.00
No. 2 hvy. melting	89.00 to	90.00
No. 1 dealer bundles	138.00 to	139.00
No. 1 factory bundles	139.00 to	140.00
No. 2 bundles	58.00 to	59.00
No. 1 busheling	135.00 to	136.00
Machine shop turnings	50.00 to	51.00
Shoveling turnings	50.00 to	51.00
Cast iron borings	50.00 to	51.00
Cut structural & plates, 5 ft. and under	119.00 to	120.00
Cut structural & plates, 2 ft. and under	142.00 to	143.00
Low phos. punchings plate	145.00 to	146.00
Foundry steel, 2 ft. & under	92.00 to	93.00
No. 1 RR hvy. melting	112.00 to	113.00
Rails, 2 ft. and under	154.00 to	155.00
Rails, 18 in. and under	156.00 to	157.00
No. 1 machinery cast	90.00 to	91.00
Mixed cast	55.00 to	56.00
Stainless		
18-8 bundles	925.00 to	935.00
18-8 turnings	670.00 to	680.00
430 bundles	220.00 to	230.00

Buffalo

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 95.00 to	$ 96.00
No. 2 hvy. melting	87.00 to	88.00
No. 1 busheling	135.00 to	136.00
No. 1 dealer bundles	135.00 to	136.00
No. 2 bundles	48.00 to	49.00
Machine shop turnings	28.00 to	29.00
Mixed borings and turnings	28.00 to	29.00
Shoveling turnings	34.00 to	35.00
Cast iron borings	37.00 to	38.00
Low phos. plate	134.00 to	135.00
Structural and plate, 2 ft. and under	139.00 to	140.00
Rails, 2 ft. and under	141.00 to	142.00
Scrap rails, random lgth	114.00 to	115.00
No. 1 machinery cast	104.00 to	105.00
No. 1 cupola cast	87.00 to	88.00

St. Louis

No. 1 hvy. melting	$ 114.00 to	$ 115.00
No. 2 hvy. melting	93.00 to	94.00
No. 1 busheling	137.00 to	138.00
No. 1 dealer bundles	141.00 to	142.00
No. 2 bundles	94.00 to	95.00
Machine shop turnings	49.00 to	50.00
Shoveling turnings	53.00 to	54.00
Cast iron borings	57.00 to	58.00
No. 1 RR hvy. melting	134.00 to	135.00
Rails, random length	118.00 to	119.00
Rails, 5 ft. and under	139.00 to	140.00
Plate and structural, 5 ft. and under	134.00 to	135.00
Cupola cast	89.00 to	90.00
Heavy breakable cast	43.00 to	44.00
Stove plate	112.00 to	113.00
Steel car wheels	139.00 to	140.00
Rerolling rails	130.00 to	131.00
Unstripped motor blocks	66.00 to	67.00

Birmingham

No. 1 hvy. melting	$ 104.00 to	$ 105.00
No. 2 hvy. melting	100.00 to	101.00
No. 1 dealer bundles	110.00 to	111.00
No. 2 bundles	84.00 to	85.00
No. 1 busheling	102.00 to	103.00
Shredder scrap	132.00 to	133.00
Machine shop turnings	46.00 to	47.00
Shoveling turnings	59.00 to	60.00
Cast iron borings	38.00 to	39.00
Electric furnace bundles	89.00 to	90.00
Elec. furnace, 3 ft. & under	104.00 to	105.00
Structural and plate, 2 ft.	149.00 to	150.00
Structural and plate, 4 ft.	138.00 to	139.00
No. 1 RR hvy. melting	138.00 to	139.00
Scrap rails, random lgth.	129.00 to	130.00
Rails, 2 ft. and under	155.00 to	156.00
Angles and splice bars	138.00 to	139.00
No. 1 cupola cast	110.00 to	111.00
Unstripped motor blocks	99.00 to	100.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 99.00 to	$ 100.00
No. 2 hvy. melting	89.00 to	90.00
No. 1 dealer bundles	130.00 to	131.00
No. 2 bundles	69.00 to	70.00
No. 1 busheling	130.00 to	131.00
Machine shop turnings	30.00 to	31.00
Shoveling turnings	40.00 to	41.00
Cast iron borings	43.00 to	44.00
Low phos. 18 in. and under	138.00 to	139.00
Rails, random length	122.00 to	123.00
Rails, 2 ft. and under	138.00 to	139.00
No. 1 cupola cast	99.00 to	100.00
Heavy breakable cast	59.00 to	60.00
Drop broken cast	113.00 to	114.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 67.00 to	$ 69.00
No. 2 hvy. melting	59.00 to	60.00
No. 2 dealer bundles	35.00 to	37.00
Mixed borings and turnings	10.00 to	11.00
Shoveling turnings	10.00 to	12.00
Clean cast, chem. borings	37.00 to	38.00
No. 1 machinery cast	80.00 to	81.00
Mixed yard cast	53.00 to	54.00
Heavy breakable cast	17.00 to	19.00
Stainless		
18-8 prepared solids	690.00 to	710.00
18-8 turnings	430.00 to	450.00
430 prepared solids	120.00 to	130.00
430 solids	135.00 to	145.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 70.00 to	$ 72.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	88.00 to	90.00
No. 2 bundles	33.00 to	35.00
No. 1 busheling	83.00 to	85.00
Shredder scrap	78.00 to	80.00
Machine shop turnings	18.00 to	20.00
Shoveling turnings	23.00 to	25.00
No. 1 machinery cast	85.00 to	87.00
Mixed cupola cast	44.00 to	46.00
Heavy breakable cast	22.00 to	24.00

San Francisco

No. 1 hvy. melting	$ 66.00 to	$ 68.00
No. 2 hvy. melting	60.00 to	62.00
No. 1 dealer bundles	58.00 to	60.00
No. 2 dealer bundles	46.00 to	47.00
Machine shop turnings	15.00 to	16.00
Cast iron borings	15.00 to	16.00
No. 1 cupola cast	87.00 to	89.00

Los Angeles

No. 1 hvy. melting	$ 63.00 to	$ 65.00
No. 2 hvy. melting	57.00 to	59.00
No. 1 dealer bundles	55.00 to	57.00
No. 2 dealer bundles	42.00 to	44.00
Machine shop turnings	12.00 to	13.00
Shoveling turnings	13.00 to	14.00
Cast iron borings	13.00 to	14.00
Elec. furnace, 1 ft. and under (foundry)	80.00 to	82.00
No. 1 cupola cast	84.00 to	86.00

Seattle

No. 1 hvy. melting	$ 94.00 to	$ 95.00
No. 2 hvy. melting	84.00 to	85.00
No. 2 bundles	69.00 to	70.00
No. 1 cupola cast	99.00 to	100.00
Mixed yard cast	85.00 to	87.00

Hamilton, Ont.

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 103.00
No. 2 hvy. melting, cut 2 ft. and under	95.00
No. 1 dealer bundles	128.00
No. 2 bundles	79.00
Mixed steel scrap	75.00
Bush. new fact. prep'd	123.00
Bush. new fact. unprep'd	99.00
Machine shop turnings	31.00
Short steel turnings	31.00
Mixed borings and turning	25.00
Cast scrap	102.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 104.00 to	$ 105.00
No. 2 hvy. melting	94.00 to	95.00
No. 2 bundles	57.00 to	58.00
Machine shop turnings	42.00 to	43.00
Crushed turnings	52.00 to	53.00
Shredder scrap	115.00 to	116.00
Cut structural plate, 2 ft. and under	130.00 to	131.00
Cut structural plate, 5 ft. and under	120.00 to	121.00
Unstripped motor blocks	60.00 to	61.00
Cupola cast	95.00 to	96.00